Applicant appreciates the allowance of Claim 20 and the indication of allowable subject matter in Claims 9 and 12-15. In response, the features of Claim 9 have been incorporated into Claim 1. The features of Claim 1 have been incorporated into independent Claim 12. Therefore, Claims 1 and 12-15 are now believed allowable.

Claims 2, 6-11 and 16-19 have been cancelled to advance prosecution of the application. Dependent Claims 3-5 have been rewritten into independent form. Further, an additional feature has been added to Claim 4.

The rejection of Claims 3-5 under 35 USC §103 as being unpatentable over Hitoshi (JP 11197843) in view of Huber (U.S. Patent No. 5 041 748) is traversed.

Hitoshi is drawn to a motor driven spot welding gun having a cushioning member 12 positioned between an encoder 11 and a rotor 5c. The cushioning member absorbs impact in the shaft direction when the electrode tip contacts an object to be welded.

Huber discloses a lightweight direct drive electromechanical actuator. The actuator is utilized for an aircraft turbo device. The actuator can be joined to a system to control an engine or a flight surface. The actuator avoids high inertia torque and thereby enables quick and accurate movement.

As set forth above, the driving units of Hitoshi and Huber have different purposes. Hitoshi operates a spot welding gun and Huber controls movement of an aircraft part. Thus, the driving units are parts of unrelated devices. Further, Hitoshi and Huber solve different problems. Hitoshi improves impact resistance for an encoder and Huber avoids high inertia torque.

For the above reasons, there is no motivation, absent Applicant's disclosure, to combine the actuator of Huber with the welding gun of Hitoshi.

Further, in the Office Action, the screw shaft, the rotary shaft, the force application shaft and the stabilizing mechanism of Huber are provided for the welding gun of Hitoshi. The screw shaft, rotary shaft, force application

shaft and stabilizing mechanism are the main elements recited in Applicant's claim. It is unclear why one having ordinary skill in the art would substitute or provide effectively all of the important elements of the drive unit of Huber for the drive unit of Hitoshi. Such substitution changes the entire structure of the Hitoshi apparatus. Thus, there is no motivation, absent Applicant's disclosure, to substitute or provide the elements of Huber for the apparatus of Hitoshi.

Independent Claims 3-5 include other features distinguishing the combination of Hitoshi and Huber. Claim 3 recites a closed bore hole at an output side of the rotary shaft. This arrangement is shown in Applicant's Figure 3. Huber and Hitoshi do not show or teach a closed bore hole on the rotary shaft. Further, the length of the driving unit is reduced by the length of the boring. Thus, the welding unit is reduced in length and becomes more compact. The moment of inertia applied to the server motor becomes smaller and the moving response of the pressure application shaft is improved.

Claim 4 recites that "the screw shaft is substantially integrally provided on the rotary shaft of the motor by rendering the rotary shaft of the motor hollow to form a hollow portion and having the screw shaft penetrate the hollow portion to fix the screw shaft to the hollow portion". Claim 4 also recites an outer diameter of the nut being rendered the same as or smaller than an outer diameter of the force application shaft". This combination of features is not believed present in the applied prior art.

Independent Claim 5 recites "the screw shaft being substantially integrally provided on the rotary shaft by fixing the screw shaft to the rotary shaft of the motor utilizing a friction force". This arrangement is shown in Applicant's Figures 3-5. As best understood, the applied prior art does not include such an arrangement. Huber discloses a monolithic ballscrew rod 18 secured in a housing by clamp 12. The ballscrew rod is directly driven by the motor 14. The screw shaft 6a of Hitoshi appears to be bolted to the rotary shaft 5i. Thus, the applied prior art does not

show or suggest fixing the screw shaft to the rotary shaft by utilizing a friction force.

For the above reasons, reconsideration and allowance of Claims 3-5 is respectfully requested.

The rejection of Claims 10-11 and 19 under 35 USC §103 as unpatentable over Hitoshi in view of Huber as applied to Claim 1, and further in view of Macbeth, has been considered. Since Claims 10, 11 and 19 are cancelled, Applicant requests withdrawal of this rejection.

The Reasons for Allowance set forth on page 6 of the Office Action have been considered. The Reasons for Allowance appear to be accurate with respect to Claim 12. However, the reasons for allowance are not correct for Claim 9 and independent Claim 20. Claim 9 and 20 do not recite a driven part provided on the rotary shaft of the motor or the screw shaft and positioned between the rear of a body of the motor and the front of a position detector. Claims 9 and 20 also do not disclose a manual operating driving part positioned eccentrically from the screw shaft for transmitting a turning torque. Thus, Claims 9 and 20 are allowable for different reasons than those set forth in the Reasons for Allowance.

Favorable reconsideration of this application and allowance of Claims 1, 3-5, 12-15 and 20 is respectfully requested.

Respectfully submitted,

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Encl: Marked-up Claims 1, 3-5 and 12
Clean replacement Claims 1, 3-5 and 12
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1. (Twice Amended) A driving unit of a welding equipment provided with a force application shaft that is driven by a motor, comprising:

a screw shaft coaxially fixed with a rotary shaft of the motor;

a nut fixed with the force application shaft and threadably engaged with a screw of the screw shaft;

a stabilizing mechanism engaging the force application shaft to prevent rotation thereof;

an elastic body disposed on the axis of the force application shaft through which the force exerts; and

an electromagnetic brake disposed on the rotary shaft of the motor,

whereby a rotary force output from the rotary shaft of the motor is converted into a reciprocating motion of the force application shaft which in turn applies a force to the welding equipment.

3. (Amended) ~~The~~ A driving unit of a welding equipment ~~according to Claim 1,~~ provided with a force application shaft that is driven by a motor, comprising:

a screw shaft coaxially fixed with a rotary shaft of the motor;

a nut fixed with the force application shaft and threadably engaged with a screw of the screw shaft;

a stabilizing mechanism engaging the force application shaft to prevent rotation thereof;

whereby a rotary force output from the rotary shaft of the motor is converted into a reciprocating motion of the force application shaft which in turn applies a force to the welding equipment; and

wherein the screw shaft is substantially integrally provided on the rotary shaft of the motor by boring a

closed bore hole at ~~the~~ an output side of the rotary shaft of the motor, and inserting one end of the screw shaft into the closed bore hole.

4. (Twice Amended) ~~The~~ A driving unit of a welding equipment ~~according to Claim 1,~~ provided with a force application shaft that is driven by a motor, comprising:

a screw shaft coaxially fixed with a rotary shaft of the motor;

a nut fixed with the force application shaft and threadably engaged with a screw of the screw shaft, an outer diameter of the nut being the same as or smaller than an outer diameter of the force application shaft;

a stabilizing mechanism engaging the force application shaft to prevent rotation thereof; and

whereby a rotary force output from the rotary shaft of the motor is converted into a reciprocating motion of the force application shaft which in turn applies a force to the welding equipment,

wherein the screw shaft is substantially integrally provided on the rotary shaft of the motor by rendering the rotary shaft of the motor hollow to form a hollow portion and having the screw shaft penetrate the hollow portion to fix the screw shaft to the hollow portion.

5. (Amended) ~~The~~ A driving unit of a welding equipment ~~according to Claim 1, wherein~~ provided with a force application shaft that is driven by a motor, comprising:

a screw shaft coaxially fixed with a rotary shaft of the motor, the screw shaft ~~is~~ being substantially integrally provided on the rotary shaft ~~of the motor~~ by

fixing the screw shaft to the rotary shaft of the motor utilizing a friction force;

a nut fixed with the force application shaft and threadably engaged with a screw of the screw shaft; and

a stabilizing mechanism engaging the force application shaft to prevent rotation thereof,

wherein a rotary force output from the rotary shaft of the motor is converted into a reciprocating motion of the force application shaft which in turn applies a force to the welding equipment.

12. (Twice Amended) ~~The~~ A driving unit of a welding equipment ~~according to Claim 1, further comprising~~ provided with a force application shaft that is driven by a motor, comprising:

a screw shaft coaxially fixed with a rotary shaft of the motor;

a nut fixed with the force application shaft and threadably engaged with a screw of the screw shaft;

a stabilizing mechanism engaging the force application shaft to prevent rotation thereof;

a driven part ~~that is~~ provided on the rotary shaft of the motor or the screw shaft and positioned between the rear of a body of the motor and the front of a position detector for transmitting ~~the~~ torque of the motor; and

a manual operating driving part ~~that is~~ positioned eccentrically from the screw shaft for transmitting a turning torque to the driven part,

wherein a rotary force output from the rotary shaft of the motor is converted into a reciprocating motion of the force application shaft which in turn applies a force to the welding equipment.